“A STUDY ON THE EFFICACY OF YOGIC INTERVENTION IN THE MANAGEMENT OF FEMALE CLIMACTERIC SYMPTOMS”

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ABSTRACT

The climacteric period, encompassing menopause and the years preceding it, represents a significant transitional phase in a woman's life, marked by hormonal fluctuations and a range of physical and psychological symptoms. These symptoms, including hot flashes, night sweats, mood swings, and sleep disturbances, can significantly impact a woman's quality of life. While hormone replacement therapy (HRT) has been the conventional treatment, interest in alternative and complementary approaches such as yoga has grown due to their holistic benefits and potential effectiveness. Yoga, with its integration of physical postures (asanas), breathing exercises (pranayama), and meditation, is proposed to alleviate climacteric symptoms by promoting physical health, mental clarity, and emotional balance. This research aims to systematically investigate the efficacy of yogic interventions in managing climacteric symptoms among women experiencing perimenopause and menopause. It explores the impact of yoga on reducing the frequency and severity of symptoms, such as hot flashes and sleep disturbances, and examines its effects on psychological well-being, including stress reduction and mood stability. Additionally, this study investigates the physiological mechanisms through which yoga may influence hormonal balance and autonomic nervous system regulation during menopausal transitions. The research also seeks to determine the long-term effects of yoga on symptom management and quality of life.

The scope of this research encompasses various yoga practices, including Hatha yoga, Vinyasa yoga, and Restorative yoga, assessing their relative effectiveness in symptom alleviation and overall well-being. By providing a comprehensive analysis of the potential benefits of yoga for women in the climacteric phase, this study aims to contribute to a more holistic understanding of symptom management during menopause. The findings may inform healthcare practices and offer women a complementary therapeutic option to improve their quality of life during this significant life stage.

INTRODUCTION

In the course of a woman's life, she will experience a profound physiological shift known as the climacteric period for the first time. This stage encompasses not only the years that come before menopause but also the times when menopause actually takes place. Some of the qualities that are often linked with this phase include changes in both physical and psychological characteristics, as well as variations in hormone levels and the cessation of menstruation. Women who are in this phase may also experience the end of menstruation. The ancient Indian practice of yoga is well-known for its holistic approach to health, which includes a variety of activities, including physical postures, breath control, meditation, and relaxation techniques. Yoga is a discipline that originated in India. India is the country that gave birth to the discipline of yoga. Yoga is an effective method for the management of climacteric symptoms since it not only enhances physical fitness but also cultivates mental clarity and emotional stability. Because of this, yoga is a valid option for managing symptoms associated with climacteric phases (Chattha et al., 2008).

Throughout the period of thousands of years, individuals have been engaging in the practice of yoga as a methodological approach. The practice of yoga has the potential to reduce stress, maintain hormonal stability, improve physical fitness, and establish a connection between the mind and the body while also enhancing physical fitness. A wide range of different approaches are used in order to accomplish these objectives. Studies have shown that yoga therapies, particularly those that place an emphasis on relaxation methods and awareness, are useful in reducing the frequency of hot flashes and night sweats, as well as the severity of these symptoms. This is especially true for yoga treatments that concentrate on mindfulness. Yoga has been demonstrated to offer a number of benefits, including the reduction of the chance of having mental symptoms, the improvement of the quality of sleep, and a significant effect on bone health, according to study (Newton et al., 2014).

Those ladies who are having climacteric symptoms may find that yogic therapies are an additional method that may be used to alleviate these symptoms. The holistic principles that these treatments adhere to make it possible for them to address the complex nature of the changes that take place during menopause. It is required, however, to do more study in order to get a more thorough understanding of the exact processes that yoga utilises in order to accomplish its advantages and to make ideas for the kind of yoga practice that is the most

effective. During the course of a woman's life, she will go through a series of natural biological phases that are characterised by changes in hormone levels. These periods include perimenopause and menopause (Jorge et al., 2016).

During the menopause and the perimenopause, each of these phases go through their own stages. Perimenopause is the term used to describe the transitional period that occurs before menopause. Menopause, on the other hand, refers to the period of time during which a woman's menstrual cycle comes to an end permanently due to menopause. Changes in hormone levels that take place during these periods have the potential to bring about a range of disorders, including those that are medical, psychological, and emotional in character. It is possible for a woman going through menopause to encounter a wide range of physical symptoms, some of which include, but are not limited to, hot flashes, irregular menstrual periods, vaginal dryness, atrophy, sleep difficulties, mood changes, sadness, anxiety, and memory problems (Archong, 2021).

Some of the management and treatment methods that are accessible include hormone replacement therapy (HRT), treatments that do not contain hormones, modifications to one's lifestyle, and acupuncture. The component of hormone replacement treatment that is being addressed here is the prescription of oestrogen or a combination of oestrogen and progesterone. Both of these options are available. Alternatively, non-hormonal therapies include the use of medicines for the treatment of mood disorders, the prevention of osteoporosis, and the treatment of vaginal dryness issues. These treatments are not associated with the usage of hormones. Changes that may be made to one's lifestyle include participating in regular physical exercise, eating a diet that is well-balanced, learning how to cope with stress, and getting enough sleep. These are all examples of things that can be done. In addition, the use of complementary and alternative medical systems may be able to provide relief from the symptoms that are being experienced (Joshi et al., 2011).

A comprehensive practice that brings together the mind, body, and spirit, yoga is a kind of exercise. Not only does it bring about these advantages, but it also encourages mindfulness, self-awareness, and inner calm. The practice of yoga is considered to be one of the components of the yoga religion. Throughout the course of thousands of years, it has progressed to the point that it is now able to accommodate the lifestyles and medical requirements of people who are now living in the contemporary day. It has been shown that

women who participate in yoga practice have improvements in their strength, flexibility, and balance, as well as improvements in their cardiovascular health and their ability to cope with discomfort. Some of the mental and emotional advantages that may be acquired from this practice include a decrease in stress, relief from anxiety and depression, an improvement in the quality of sleep, an increase in mental clarity, and a boost in self-esteem. These are just some of the benefits that may accompany this practice (Lee et al., 2009).

Yoga may be useful during pregnancy and after birth, and it may also be effective in the treatment of symptoms associated with menopause. In addition to lowering the pain associated with menstruation, yoga may also also be good in the treatment of menopausal symptoms. It is possible for women of any age or fitness level to participate in this practice, which makes it into a flexible activity that can be changed to suit to the specific requirements of each person and the circumstances of their health. This practice is a great way to make women more physically active. It is possible that yoga might provide therapeutic advantages during menopause. These benefits include the ability to influence hormonal balance and the alleviation of symptoms often associated with menopause. It is possible that women who do yoga may experience these advantages (Swain et al., 2021).

Not only can yoga help reduce levels of stress hormones like cortisol, but it also helps promote hormonal balance, making it a crucial component in the process of hormone regulation. Additionally, it activates the parasympathetic nervous system, which results in relaxation and a condition of hormonal homeostasis. This is a significant benefit. There is a possibility that yoga may have a direct influence on the endocrine glands, which might perhaps lessen the fluctuations in hormone levels that are associated with menopause. Study after study has shown that yoga may reduce a variety of symptoms, including but not limited to hot flashes, nocturnal sweats, trouble sleeping, mood swings, anxiety, and feelings of hopelessness. The hormonal indicators that are enhanced by this treatment plan include the levels of oestrogen, cortisol, and stress hormones, among other indications of hormonal health. It has been shown that the practice of yoga may enhance the mental health of women by reducing the levels of stress, creating emotional stability, enhancing self-awareness, and offering social support (Cramer et al., 2012).

The purpose of this research is to explore the efficacy of yoga practices for the treatment of climacteric symptoms in the setting of menopause. The practice of yoga, which includes physical postures, breathing exercises, and meditation practices, is beneficial for a number of reasons, including the promotion of hormonal balance, the reduction of stress, the enhancement of physical flexibility, and the development of emotional resilience. In addition to this, it provides advice that is helpful for women who are seeking natural treatment options. Through the enhancement of vaginal health, sexual function, and bone health, yoga provides women with the capacity to maintain their health and quality of life despite the problems they are confronted with (Chattha et al., 2008).

There is some evidence that yoga, which takes a holistic approach to health, might help alleviate climacteric symptoms in women who are going through the perimenopause and menopausal stages of their lives. In addition to promoting hormonal equilibrium, lowering stress levels, enhancing physical well-being, fostering emotional stability, and enhancing sleep quality, it also addresses the mental and emotional aspects of the problem. The benefits of yoga have been shown by scientific study, which reveals that it may reduce symptoms such as hot flashes, nocturnal sweats, and mood swings. Yoga has been proved to demonstrate its efficacy. The practice of yoga, when included into regular routines, provides women with the capacity to more easily overcome the challenges that are associated with menopause (Jayabharathi, 2013).

Because of fluctuations in hormone levels, the climacteric era, which includes both perimenopause and menopause, poses a significant challenge to the health of women. This time contains both phases of the menopausal transition. Yoga, which is a holistic approach that incorporates physical postures, breathing exercises, and meditation approaches, has been suggested as a potential treatment for climacteric symptoms. This is because yoga is a complete approach. On the other hand, there is still a dearth of information about the efficacy of yoga in the therapy of these symptoms. Ascertaining whether or not yoga is useful in easing climacteric symptoms, identifying gaps in the current research, and suggesting possible future research methodologies are the goals of this study. The purpose of this study is to undertake a complete analysis and synthesis of the available literature in order to accomplish these goals (Kaur et al., 2014).

REVIEW OF LITERATURE

When a woman reaches menopause, she goes through a physiological period that is characterised by both physical and psychological symptoms that have a substantial influence on her overall health. For the purpose of supplementing conventional hormone treatment (HT), there is a rising interest in integrative therapies, which include the utilisation of medicinal plants and herbal preparations, among other complementary medical practices. On the other hand, studies have shown a connection between hormone therapy and an increased risk of developing breast cancer, heart disease, stroke, and blood clots. As a result, women are becoming increasingly hesitant to receive hormone treatment. Recent research has uncovered medicinal plants that have the potential to be used for therapeutic purposes; however, the effectiveness of these herbs differs from person to person.

There are connections between climate-related illnesses, such as fibromyalgia (FM) and climate-related disorders, in terms of the epidemiological and clinical features that they share. On the other hand, there is a limited body of data that supports the effectiveness of menopausal hormone therapy in the treatment of primary FM. The purpose of a research that was carried out in 2022 was to evaluate the similarities and differences between climacteric symptoms and health-related quality of life (HRQOL) among female participants from Madrid and Belgrade. Several characteristics, including marriage, gynaecological symptoms, and prolonged amenorrhoea, were shown to be associated with a lower MRS score among women from Madrid, as demonstrated by the findings.

It is very uncommon for women to have difficulties during menopause, particularly at a period of their lives when they are expected to discharge substantial societal commitments. Changes in hormone levels that occur during the transition from menopause to postmenopause have an effect on a number of physiological systems. These systems include the central nervous system, metabolism, body weight, cardiovascular health, musculoskeletal health, atrophy of the urogenital system and skin, and sexual dysfunction. There are a number of factors that may have a substantial influence on the frequency and severity of symptoms, including ethnicity, geographic region, and individual traits. In women who have gone through menopause, some symptoms may be associated with additional health problems, which is why it is essential for therapeutic practice.

GSM, which stands for genitourinary syndrome of menopause, is a disorder that is brought on by a decrease in the oestrogenic stimulation of the vulvovaginal and lower urinary tracts respectively. A woman's health, sexual function, and general quality of life are all impacted as a result of this. The diagnosis and treatment choices for menopausal symptoms are quite important, and it is particularly important for women's health to have a solid grasp of the physiology of menopause and the ageing process. An examination of the epidemiology of menopause, its influence on organ systems and disorders, and the treatments that are now available for osteoporosis and menopausal symptoms are included in this paper.

Women may have considerable psychological and emotional effects brought on by menopause, with many of them suffering symptoms that are more severe than they had expected. According to the findings of several studies, women are more likely to experience emotions of loneliness and often lack access to information and assistance. Head symptoms, chest symptoms, weariness, and panic symptoms were revealed to be major indications of psychological disorders during the transition from menopause to postmenopause, according to a research conducted in Pakistan. In order to investigate the mental health of Australian women throughout the perimenopause and menopause, a mixed-methods approach was used in the research conducted in Australia. The results bring to light the need of enhancing education on women's healthcare services, as well as the necessity of enhancing education on menopause and menopause for both women and healthcare professionals.

Symptoms of anxiety, despair, and psychological distress are greatly impacted by vasomotor symptoms, weight gain, and weariness, according to the findings of a research conducted in the Emirati province of Egypt in the year 2020. There is a high prevalence of psychological distress among women who have gone through menopause, and this discomfort is closely connected with unfavourable views regarding menopause. It is possible that the implementation of interventional procedures that explicitly treat psychological distress might improve the capacity of menopausal women to deal with the transition from the premenopausal to the postmenopausal years, and eventually improve their mental well-being.

Menopausal symptoms, more notably climacteric syndrome, which typically affects around 80 percent of women, are the primary focus of this study. Traditional Chinese Medicine (TCM) is a therapeutic technique that is chosen for menopausal symptoms since, in comparison to hormone therapy, it has a reduced incidence rate of side effects. There is a significant connection between vasomotor symptoms and hot flushes, which may develop into heart failures that are very catastrophic. The use of hormone replacement therapy (HRT) is beneficial for the management of heart failures; however, it is not indicated for women who have a history of cancer that is reliant on hormones. Psychotropic medications, herbal therapy, behavioural methods, and selective serotonin reuptake inhibitors are some of the alternative treatments that are available for hot flashes.

There is a change in hormone levels that occurs during menopause, which has an impact on women's physical, psychological, sexual, and general wellness. Vasomotor and vulvovaginal atrophy are two of the symptoms that are associated with menopause, which occurs at an average age of 51 years old in the United Kingdom. The purpose of this study is to explore the evidence, effectiveness, and safety of non-hormonal pharmacological treatments as well as complementary and alternative therapies for the treatment of menopausal symptoms. The use of hormone treatment is often avoided owing to the hazards that are connected with it. On the other hand, non-pharmaceutical techniques such as relaxation, exercise, herbal therapies, and diets that are high in phytoestrogens have insufficient proof. Acupuncture, a treatment that has been shown to alleviate menopausal symptoms, has the potential to be included into primary care in order to give choices that do not need the use of hormone medication.

A number of features of yoga practices are investigated by Baier, Maas, and Preisendanz (2018). These topics include the historical foundations of yoga as well as its contemporary popularity around the world. They explore a variety of issues, including the practice of postures, the relationship between yoga and sexuality, theistic notions, the influence of Buddhism on the early phases, and the interplay of Buddhist philosophy with classical yoga. In addition to this, the book delves into the emergence of yoga within the realm of Viennese occultism, the amalgamation of yoga and natural therapy in contemporary India, and the development of Patañjali's iconography.

The research conducted by Dobos and Cramer in 2019 discovered that the top motivations for beginning a yoga practice were relaxation (26.6% of participants) and preventative reasons (25.5% of participants). Preventative reasons accounted for 38.4% of the reasons why people continued to practise throughout the years, while spiritual reasons accounted for 26.4% of the reasons. It was more probable that participants who had completed higher levels of education and had been practicing yoga for more than five years had chosen a major reason for their yoga practice that was different from the reason they started practicing yoga. A further finding was that individuals who had greater levels of yoga competence were more inclined to continue practicing yoga.

In this study article, an investigation is conducted to understand the connection between Yoga and Āyurveda during the premodern era. The objective of this study is to examine the influence of Àyurveda on Yoga literature from the mediaeval period, with particular emphasis on terminology, philosophy, and practice. An assortment of literature pertaining to physical exercises and ascetic states of latent meditation, often referred to as samādhi, exists within the corpus. The body of literature asserts that Yoga, which is also referred to as abhyāsa, is important for attaining mokṣa, which is another name for freedom. In addition to this, the research investigates the philosophy and practice of yoga texts in order to evaluate the potential impact of Àyurveda.

Yoga is a discipline that has been around for a very long time and blends spiritual and physical well-being. It has been shown to be beneficial for a variety of diseases. When it comes to alleviating pain and disability in people who suffer from conditions such as depression, type 2 diabetes, and low back pain, research consistently demonstrates that yoga is better for both medication and exercise. Twenty-nine percent of the population in Germany either regularly engages in yoga or has an interest in exploring the practice. The practice of yoga has been found to have beneficial effects on health for those who are dealing with health difficulties in both the United States and Australia. The results of a research conducted in the United States on Iyengar yoga revealed that ninety percent of participants reported an improvement in their health as a direct consequence of their ongoing commitment to the practice. In order to have a better understanding of the features of yoga practice in regard to other varieties of yoga, further study is required.

The purpose of this research is to determine whether or not yoga is useful in reducing the side effects of menopause in females. Hot flashes, nocturnal sweats, exhaustion, pain, decreased libido, and mood swings are some of the symptoms that are associated with menopause, which is the permanent cessation of ovarian function. Menopause normally occurs around the age of fifty and is characterised by these symptoms. In excess of seventy-five percent of women, these symptoms, which have a substantial influence on their quality of life, are experienced. Yoga, which is gaining popularity in both North America and Europe, is one of the alternative therapies that an increasing number of women are turning to in order to ease these symptoms. Randomised studies that were published up to February 2017 are the subject of this analysis. The study focuses on randomly assigned trials that were published up until February 2017. The data indicate that the quality of life associated with menopause has greatly improved, notably in terms of vasomotor, psychosocial, and somatic symptoms. This improvement is particularly noticeable in the case of VAS. When walking and SKY activities were compared, it was found that the group that maintained continuous SKY levels had greater levels of antioxidant enzymes. Follicle-stimulating hormone and dehydroepiandrosterone sulphate levels, on the other hand, did not show any signs of improvement.

In spite of these results, the research indicates that those women who are going through menopause may benefit from practicing yoga as an alternative. Women who have not had their periods for more than a year and who have stopped generating hormones such as oestrogen and progesterone are said to have entered menopause. Both pharmaceutical and non-pharmacological approaches are used in the treatment of depression, which is a prevalent psychological consequence of menopausal experience. It has been discovered that yoga, which is a kind of treatment that does not include the use of pharmaceuticals, is useful in reducing the symptoms of depression among women who are going through menopause in the Babakan Sari Sub-District. The practices of yoga, which include physical movement, breathing, and cognition, were shown to be useful in lowering the symptoms of depression in women who had reached menopause, according to a research that used a quasi-experimental methodology.

Aromatherapy, massage, yoga, acupuncture, nutritional and herbal supplements, exercise, and reflexology were shown to be useful in reducing psychological problems during menopause,

according to a methodical assessment of complementary and alternative medicine (CAM) treatments for the condition. Regarding the effectiveness of exercise and reflexology, however, there is still some dispute. It is essential to take the required precautions while employing complementary and alternative medicine (CAM) treatments in clinical settings, despite the fact that some of these therapies have a favourable influence on reducing mental symptoms. It is necessary to do further study using techniques of a better quality in order to arrive at more informed judgements on the influence of various complementary and alternative medicine (CAM) treatments on the psychological symptoms of menopause.

Menopause is a disorder that is characterised by infertility owing to changes in reproductive hormones. This research delves at the usage of yoga as a coping method for menopause. With the help of Lazarus and Folkman's transactional theory of stress and coping as well as Iwasaki and Mannell's leisure stress coping conceptual framework, the purpose of this research is to explore whether or not there is evidence to support yoga as a form of coping. Women between the ages of 40 and 65 who are going through menopause and who want to better their health and deal with the difficulties they experience may discover that yoga may serve as a leisure activity for them. The data provide weight to this view.

In addition, the research emphasises the significance of being familiar with the process of menopause, the negative effects that it has on an individual's life, and the investigation of potential methods for reversing the effects of menopause. This natural process, known as menopause, is responsible for bringing about considerable changes in the lives of women and often leads to serious debilitation. In addition to providing a description of the many treatment options that are available, this article analyses the origins and symptoms of menopausal and postmenopausal disorders. When successful, herbal and complementary medicines may help alleviate the unpleasant symptoms associated with menopause and give relief from those symptoms. This is the focus of the research.

The purpose of this study is to investigate whether or not practice of yoga may be beneficial in the treatment of depression in postmenopausal women who are transitioning from menopause to postmenopause. Several different search engines are used in the research project in order to get information on the topic issue. During the time leading up to, during, and after menopause, women are more prone to have symptoms of depression, according to

research that has been conducted into this phenomenon. This phenomena is influenced by a number of factors, including previous mental health problems, socioeconomic status, physical menopausal symptoms, and health status. The practice of yoga has been shown to be an effective strategy for treating 53 different types of menopausal depression.

There is not a single scientific research that has been conducted on yoga explicitly focussing on its benefits for women who are suffering depression after menopause. Yoga, which is a non-invasive approach, has the potential to enhance both physical and mental health via the practice of asana, pranayama, and dhyana. An example of a frequent sort of yoga practice is known as asana, which literally translates to "postures." It is not yet known how yoga may be useful in treating a broad variety of problems, but it is known that it may assist women in achieving excellent health and in treating a variety of disorders. In addition to promoting good menstruation and general health, the holistic approach that yoga takes may be beneficial to women in the treatment of issues that are connected with menopause. Low back pain (LBP) and pelvic girdle pain (PGP) are two prevalent musculoskeletal illnesses that afflict roughly fifty percent of pregnant women. This study investigates the influence that yoga has on the treatment of these specific conditions. Under the ribs but above the glutei folds, low back pain (LBP) is characterised by discomfort, and it may be accompanied by radiation down the legs. All women of reproductive age are susceptible to PGP, regardless of their level of education, ethnicity, or employment situation, and the condition may continue for years after the delivery of a child.

Studies have demonstrated that yoga may enhance the physical, emotional, social, and psychological well-being of adult cancer patients. This is in addition to the benefits that yoga has for low back pain individuals. The hypothalamic-pituitary-adrenal axis is modulated by yoga, which does not entail any intrusive treatments. This results in a reduction in the levels of stress hormones and an improvement in the functioning of the parasympathetic system. Additionally, it may assist patients in becoming more tolerant of pain and has the potential to reduce emotions of worry and despair that are connected with pain. As a conclusion, yoga has the potential to give a therapy that is both more successful and more cost-effective for a variety of illnesses, including breast cancer, low back pain, and postpartum depression (PGP). Patients may enhance their overall quality of life and lessen the negative effects of standard medicines by including yoga into their treatment regimens. Yoga can help patients improve their overall quality of life.

Continuous low back pain, often known as CLBP, is a persistent ailment that affects around 10% of the population in the United States and 7.3% of the population worldwide. The activities that are part of traditional treatments include physical therapy and the normal medical care. In the treatment of this illness, it has been discovered that yoga, which is a mind-body practice, is beneficial. On the other hand, there is a paucity of evidence on the advantages of yoga in comparison to other forms of exercise and physical therapy activities. A review and meta-analysis were conducted with the purpose of determining whether or not yoga is more effective than non-exercise and physical therapy activities in terms of reducing pain, reducing disability, and improving quality of life in individuals who suffer from chronic low back pain.

Frozen shoulder, also known as FS, is a syndrome that causes the glenohumeral joints to become stiff and painful, resulting in a significant amount of discomfort. In the general population, the incidence of feeding syndrome (FS) varies from 2% to 5%, with women suffering a modest prevalence of the condition. There are a number of factors that might raise the risk of getting Parkinson's disease. Some of these factors include rheumatic sickness, recent shoulder surgery, thyroid disorders, osteoporosis, Dupuytren's contracture, cardiovascular disease, stroke, and parkinsonism. The practice of yoga, which has been around since ancient times in India, has been shown to have positive benefits on chronic disorders that affect the musculoskeletal system.

Through the use of meta-analytic methods, Zoogman, Goldberg, Vousoura, Diamond, and Miller conducted a research in 2019 that investigated the effect that yoga had on distressing symptoms of anxiety. There were a total of 38 randomised controlled trials (RCTs) that were carried out, and the findings indicated that regular yoga practice had a significant and meaningful influence on the symptoms of anxiety. In addition, the research discovered that the yoga intervention had a statistically significant influence on biological measurements, mental health outcomes, physical health measures, and combined mental and physical health outcomes. There was a strong moderating impact brought about by the site of the investigation, with the effects being of the largest size among samples from India.

Mookkiah & Kumar's 2021 study investigated the usefulness of yoga-based intervention techniques in elevating the levels of self-efficacy in primary school teachers. A single group design was used for both pre-test and post-test, with forty teachers in the Dindigul District of Tamil Nadu, India. The results suggest that the consistency of yoga-based intervention is greater in terms of boosting self-efficacy of teachers, particularly primary teachers. The study also demonstrated that the self-efficacy of teachers was raised as a result of the synergies formed by the yoga-based intervention.

The study explores the popularity of yoga as a therapeutic and relaxation technique for individuals of all ages, including elementary teachers. Yoga incorporates various techniques such as stretching, asanas, deep breathing, and meditation to enhance physical flexibility and strengthen the skeletal system. Studies have shown that practicing yoga can improve mental and emotional well-being, enhance sleep quality, and stimulate the production of melatonin. Meditation also boosts cardiac output, affecting the basal metabolic rate.

Previous research has investigated the psychological impact of yoga on sadness, anxiety, and self-efficacy. A 2004 systematic study found promising outcomes in treating obsessive-compulsive disorder. A recent evaluation included 27 trials, with 19 reporting a notable decrease in state and/or trait anxiety. Yoga has been found to positively influence emotions, self-compassion, and the inhibition of the posterior hypothalamus. A meta-analysis of nineteen meta-analyses examined the differential and incremental effects of various yoga components. The results showed that combinations of therapies that included a number of different components consistently performed better than standard interventions. However, some components or combinations were more helpful in improving specific clinical conditions or factors, suggesting the need for individualized programs.

The study by Susanti, Sonko, Chang, Chuang, & Chung (2022) investigated the effects of yoga on menopausal symptoms and sleep quality in women in various stages of menopause. A total of 104 participants were allocated to either the intervention or control group. The study included questionnaires such as the Pittsburgh Sleep Quality Index, Depression, Anxiety, and Stress Scale, the Multidimensional Scale of Perceived Social Support, and the Menopause Rating Scale. The findings showed that yoga significantly improved the quality of sleep experienced by women who had completed menopause or were in the process of

going through menopause. The research also explored the benefits of yoga for climacteric women, who are not physically capable of participating in sports due to physical limitations. The study found that women who have reached menopause may benefit from yoga in terms of both their physical and mental wellbeing. The findings support the proposition that yoga can be used as an important component in the development of the condition of climacteric women and the promotion of the national fitness program. As a result, yoga has been found to aid these women in feeling better, leading them to engage in its practice.

The 2022 study by Gronek & Domaszewska explores the aging process, a significant risk factor for chronic diseases, particularly in the elderly population. Yoga, a popular exercise intervention, has been found to have a positive impact on individuals of advanced age, particularly women who have gone through menopause. The study analyzed the influence of yoga on the aging process, focusing on women who have gone through menopause.

Kalra et al. (2022) also examined the symptoms of menopause, which are influenced by hormonal, psychological, and physical changes during menopause. Sleep issues, such as insomnia, irritability, and restlessness, are common after menopause. To reduce symptoms, it is suggested that regular physical activity, such as yoga, can be increased. Yoga can induce a relaxation response, which can reduce physical and psychological symptoms. The study aimed to understand the impact of yoga practices on the quality of sleep experienced by women going through menopause for various reasons.

This study explores sleep issues in women before menopause and postmenopause, focusing on the severity of symptoms and the connection between hot flashes and depression. It suggests that sleep problems are linked to menopausal changes and may be comorbid with depressive disorders. The UK government emphasizes the importance of supporting middle-aged and older women, while a study found that yoga can reduce symptoms and cardiovascular disease risk factors in women experiencing menopause.

Huang and Wang's study explores mindfulness-based therapies for menopausal symptoms, highlighting their potential to reduce health risks like cancer and obesity. With breast cancer cases expected to rise, yoga and nonpharmacological techniques are being explored as potential treatments.

AIMS AND OBJECTIVES:

AIM

The aim of this research is to systematically investigate the efficacy of yogic intervention as a therapeutic approach in managing climacteric symptoms among women experiencing perimenopause and menopause. This study seeks to explore the potential benefits of yoga practices, including physical postures (asanas), breathing exercises (pranayama), and meditation techniques, in alleviating the diverse range of symptoms associated with the climacteric phase.

OBJECTIVE

i. To Assess the impact of yoga interventions on reducing the frequency and severity of climacteric symptoms such as hot flashes, night sweats, mood swings, sleep disturbances, and vaginal dryness.
ii. To Examine the effects of yoga on psychological well-being, including reductions in stress levels, improvements in mood stability, and management of symptoms related to anxiety and depression during perimenopause and menopause.
iii. To Investigate the underlying physiological mechanisms through which yoga practices may influence hormonal balance, neuroendocrine pathways, and autonomic nervous system regulation in women undergoing menopausal transitions.
iv. To determine the sustained effects of yoga interventions on symptom management, quality of life, and overall health outcomes over extended periods, considering the progressive nature of menopausal changes.

MATERIALS AND METHODS

STUDY DESIGN

This study is a Randomized Controlled Trial (RCT) designed to evaluate the effects of a structured yoga intervention on menopausal symptoms, thyroid hormone levels, body mass index (BMI), and overall quality of life in menopausal women. The trial was conducted over six months, with assessments at baseline and at the end of the study period.

STUDY POPULATION

The study included **perimenopausal and menopausal women aged 40 to 55 years**, residing in **Mangalore City, India**. Participants were recruited through **local community centers, health clinics, and online advertisements**. Eligible participants were selected based on predefined inclusion and exclusion criteria to ensure the validity and reliability of the study.

INCLUSION CRITERIA:

1. Women aged 40-55 years (including perimenopausal and menopausal stages).
2. Presence of moderate to severe menopausal symptoms, including vasomotor symptoms (hot flashes, night sweats), sleep disturbances, mood swings, anxiety, and self-reported stress.
3. No history of hormone replacement therapy (HRT) in the past six months.

EXCLUSION CRITERIA:

1. Women with clinically diagnosed cardiovascular diseases (e.g., coronary artery disease, arrhythmias).
2. Presence of neurological disorders (e.g., epilepsy, multiple sclerosis) or psychological conditions (e.g., severe depression, schizophrenia).
3. History of hysterectomy or bilateral oophorectomy.
4. Patients with diagnosed hypertension (≥140/90 mmHg).

5. Individuals suffering from arthritis or severe orthopedic conditions that may impede yoga practice.
6. Recent surgery within the last six months.
7. Active smoking or alcohol consumption.

The exclusion of women with hypertension and arthritis in this study was necessary to maintain a homogeneous sample and ensure the accurate assessment of yoga's effects on autonomic function and menopausal symptoms. Both conditions independently impact autonomic regulation and symptom severity, which could introduce confounding variables and obscure the specific contributions of yoga. Additionally, certain yoga practices may not be suitable for individuals with hypertension or arthritis, making exclusion a necessary step to prioritize participant safety and adherence to the intervention. By focusing on a controlled population, this study enhances internal validity and establishes a clearer cause-and-effect relationship between yoga and the measured outcomes. However, this exclusion also presents a limitation, as it restricts the generalizability of the findings to the broader menopausal population, many of whom experience these common comorbidities. Future research should aim to include women with these conditions to determine whether yoga provides similar benefits across diverse health profiles, thereby enhancing external validity.

SAMPLE SIZE AND ALLOCATION

The sample size calculation was based on the pooled standard deviation (SD) of vasomotor symptoms, estimated at **1.3**, as reported by **R. Chattha et al.** An effect size of **0.36**, indicating a small effect, was considered for this study. The sample size was calculated using a **one-sided hypothesis test**, with a **significance level of 0.05** and **80% power**, ensuring sufficient sensitivity to detect meaningful differences between the intervention and control groups.

The initial estimated sample size was **260 participants**; however, due to **a high dropout rate influenced by the COVID-19 pandemic**, the final analyzed sample size was **100 participants**. The high attrition was primarily due to participants being unable to attend in-person sessions, logistical constraints, and health concerns during the pandemic. Participants were randomly assigned to one of two groups:

1. **Intervention Group:** Yoga intervention along with standard medical care.
2. **Control Group:** Standard medical care and daily walking exercise.

INTERVENTIONS

Yoga Intervention Group

Participants in the intervention group attended supervised yoga sessions for 60 minutes, four days per week on alternate days, over the first month. During the first month, participants were encouraged to practice self-yoga three additional days, continuing at home from the second month. Follow-up was conducted every 15 days via telephone to ensure adherence.

Yoga Intervention Component Practice Duration:

- **Warm-Up:** Sukshma Vyayama (Minor Physical Exercises) - 5 minutes
- **Asanas (Yoga Postures):** Various Asanas (e.g., Tadasana, Trikonasana) - 30 minutes
- **Pranayama (Breathing Techniques):** Nadishuddhi, Ujjayi, Bhramari - 15 minutes
- **Relaxation:** Deep Relaxation Technique/Shavasana (Guided) - 10 minutes

The yoga sessions included a mix of asanas, pranayama, and meditation techniques to promote physical and mental well-being.

CONTROL GROUP

Participants in the control group engaged in daily 30-minute walking exercises and continued to receive standard medical care for managing thyroid hormone levels throughout the study.

FOLLOW-UP AND ADHERENCE

Both groups were contacted twice a month via telephone to monitor adherence. The intervention group maintained a diary of their yoga sessions and received guidance and motivation for continued practice.

BLINDING

The study utilized a single-blind design, where the outcome assessor was blinded to group allocation to minimize bias in data collection and analysis. The researcher administering the interventions was not blinded due to the nature of the yoga classes.

OUTCOME MEASURES

Primary Outcomes:

1. **Changes in BMI:** Measured at baseline and at the end of the study using a standardized digital scale and stadiometer.
2. **Thyroid Hormone Levels:** TSH, T4, and T3 levels measured at baseline and after six months using a standardized laboratory assay.

Secondary Outcomes:

1. **Quality of Life Improvement:** Assessed using standardized questionnaires, including Greene's Climacteric Scale for menopausal symptoms.
2. **Estrogen Levels:** Measured at baseline and at the end of the study.

DATA COLLECTION AND ANALYSIS

Data was collected at two time points: baseline and after six months of intervention. Both primary and secondary outcomes were recorded for each participant. Statistical analysis was conducted using appropriate software, with independent t-tests for continuous variables and chi-square tests for categorical variables. A p-value of less than 0.05 was considered statistically significant.

ETHICAL CONSIDERATIONS

The study protocol was reviewed and approved by the Institutional Ethics Committee. Informed consent was obtained from all participants prior to enrollment, with assurance of their right to withdraw from the study at any time without consequences to their medical care.

This RCT was designed to evaluate the effects of a yoga intervention on menopausal symptoms, thyroid hormone levels, BMI, and quality of life among menopausal women, providing a holistic approach to managing menopausal symptoms and improving overall health outcomes.

RESULTS AND OBSERVATION:

The age distribution of participants in the study was analyzed across three distinct age groups: 40-44, 45-49 and 50-54 years, within both the control and experimental groups. The purpose of this analysis was to understand the demographic breakdown of the study population and ensure comparability between the two groups.

In the control group, 33.8% of participants were aged between 40 and 44 years, representing a substantial proportion of this group. The majority of participants in the control group fell within the 45-49 age range, accounting for 41.5% of the total. The remaining 24.6% of participants were in the 50-54 age category. This distribution suggests a fairly balanced representation of the different age ranges with a slight predominance of participants in the 45-49 age bracket.

Similarly, in the experimental group, 24.7% of participants were aged 40-44 years, slightly less than in the control group. The 45-49 age group comprised 41.6% of the experimental group, closely mirroring the proportion seen in the control group. Notably, the proportion of participants in the 50-54 age range was higher in the experimental group at 33.8%, compared to 24.6% in the control group. This distribution indicates a slight skew towards older participants in the experimental group.

Overall, the age group distribution reveals a relatively comparable demographic composition between the control and experimental groups with the largest proportions of participants in both groups falling within the 45-49 age range. However, there is a slightly higher representation of participants in the older age group (50-54) in the experimental group compared to the control. This balance across age groups enhances the validity of comparisons between the two groups and suggests that any observed differences in outcomes are unlikely to be due to age disparities alone.

DESCRIPTIVE STATISTICS AND COMPARATIVE ANALYSIS OF BASELINE CHARACTERISTICS

The baseline characteristics of the study participants were evaluated to ensure comparability between the control and experimental groups before the yoga intervention. The mean age of participants in the control group was 46.77 years (SD ± 4.49) while the experimental group had a slightly higher mean age of 47.64 years (SD ± 4.36). The age ranges for both groups were identical, spanning from 40 to 55 years and the difference was not statistically significant ($p = 0.2339$), indicating a similar age distribution across the groups.

The pre-intervention weight showed a slight difference between the groups with the control group having a mean weight of 72.60 kg (SD ± 10.78) and the experimental group having a mean weight of 69.80 kg (SD ± 11.26). The weight ranges were similar across both groups and the difference was not statistically significant ($p = 0.1220$). Similarly, the pre-intervention body mass index (BMI) was 30.64 (SD ± 4.56) in the control group and 29.47 (SD ± 4.72) in the experimental group with comparable ranges. This difference was also not statistically significant ($p = 0.1229$).

Thyroid hormone levels were also assessed. The pre-intervention thyroid-stimulating hormone (TSH) levels were similar between the groups with a mean of 7.67 (SD ± 1.93) in the control group and 8.08 (SD ± 1.92) in the experimental group with no significant difference ($p = 0.1938$). The pre-intervention T4 levels were 4.38 (SD ± 1.02) in the control group and 4.50 (SD ± 0.98) in the experimental group, also showing no significant difference ($p = 0.3451$). Similarly, pre-intervention T3 levels were closely aligned between the groups with a mean of 1.76 (SD ± 0.56) for the control group and 1.91 (SD ± 0.58) for the experimental group ($p = 0.1457$).

Overall, the baseline characteristics demonstrate that the control and experimental groups were well-matched before the intervention with no statistically significant differences in age, weight, BMI and thyroid hormone levels. This balance in baseline characteristics supports the validity of subsequent comparisons to assess the effects of the yoga intervention.

COMPARATIVE ANALYSIS AFTER YOGA INTERVENTION

This section presents the descriptive statistics for the baseline characteristics of the study population, categorized into the control and experimental groups. The analysis includes key continuous variables such as age, body mass index (BMI) and thyroid hormone levels (TSH, T4, T3) before and after the intervention.

The mean age of participants in the control group was 46.77 years (SD ± 4.49) while the experimental group had a mean age of 47.64 years (SD ± 4.36). BMI measurements were taken at baseline and after the intervention. The control group's baseline BMI was 30.64 (SD ± 4.56) with a post-intervention BMI of 30.46 (SD ± 4.52), indicating minimal change. Conversely, the experimental group demonstrated a significant reduction in BMI from a baseline of 29.47 (SD ± 4.72) to 27.58 (SD ± 4.44) with a p-value of 0.0001, suggesting the yoga intervention was effective in reducing BMI.

Thyroid function was assessed through TSH, T4 and T3 hormone levels. For TSH, the control group maintained relatively stable levels (pre-intervention mean of 7.67 ± 1.93 and post- intervention mean of 7.73 ± 1.95) while the experimental group showed a significant decrease from 8.08 (SD ± 1.92) to 6.77 (SD ± 1.74), yielding a p-value of 0.0020. Similar trends were observed for T4 and T3 levels with the experimental group showing notable improvements post-intervention.

The p-values calculated through independent t-tests indicate significant differences between the groups for BMI post-intervention, TSH post-intervention, T4 post-intervention and T3 post- intervention, confirming the effectiveness of the yoga intervention in the experimental group in comparison to the control.

This analysis provides a comprehensive overview of the baseline characteristics and changes observed, establishing a foundation for further exploration of the intervention's impact on the overall health and quality of life of the participants.

COMPARATIVE ANALYSIS AFTER YOGA INTERVENTION

Characteristic	Control (N = 50)	(Experiment N = 50)	p-value 2
Estrogen Pre	30 (20, 40)	27 (17, 37)	0.446
Estrogen Post	30 (21, 40)	26 (19, 35)	0.189
GCS Pre	27 (17, 32)	26 (17, 33)	0.981
GCS Post	39 (31, 45)	21 (12, 28)	<0.001

Estrogen levels were assessed to evaluate hormonal changes pre- and post-intervention. The baseline estrogen levels in the control group had a median value of 30 (Q1: 20, Q3: 40), while the experimental group had a median value of 27 (Q1: 17, Q3: 37), with no statistically significant difference (p = 0.446). Post-intervention, estrogen levels remained stable in the control group (30, Q1: 21, Q3: 40) but slightly decreased in the experimental group (26, Q1: 19, Q3: 35), though the difference was not statistically significant (p = 0.189).

Greene's Climacteric Scale (GCS) scores were analyzed to assess changes in menopausal symptoms. At baseline, the control group had a median score of 27 (Q1: 17, Q3: 32), while the experimental group had a comparable median score of 26 (Q1: 17, Q3: 33) (p = 0.981). Post-intervention, the control group showed an increase in GCS scores to 39 (Q1: 31, Q3: 45), indicating a worsening of symptoms. In contrast, the experimental group exhibited a significant reduction in GCS scores to 21 (Q1: 12, Q3: 28), with a highly significant p-value of <0.001, suggesting that the yoga intervention was effective in alleviating menopausal symptoms.

These findings highlight the potential benefits of yogic practices in improving symptom severity in menopausal women, even in the absence of significant estrogen level changes.

SUMMARY AND CONCLUSION

This randomized controlled trial aimed to evaluate the effects of a structured yoga intervention on menopausal symptoms, thyroid hormone levels, body mass index (BMI), and overall quality of life in menopausal women. The study involved a well-defined sample of women aged 40 to 55 years, randomly assigned to either an experimental group receiving the yoga intervention or a control group, which continued with standard medical care and daily walking exercise. The intervention was carried out over six months, with pre- and post-intervention assessments measuring changes in BMI, thyroid hormone levels, and quality of life.

The results showed that the yoga intervention significantly impacted several primary and secondary outcomes. Participants in the experimental group showed a significant reduction in BMI compared to the control group, suggesting that yoga can be an effective non-pharmacological approach to managing weight among menopausal women. The yoga intervention was associated with a meaningful reduction in TSH levels and an increase in T3 and T4 levels in the experimental group, suggesting that yoga may improve thyroid function, potentially reducing the need for medication or other interventions to manage hypothyroidism in menopausal women.

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